

**I CLAIM:**

1. In a gas turbine engine, a method for controlling a gap between a rotor blade tip and a turbine shroud, said method comprising:  
  
determining a cooling air requirement for said shroud; and  
  
controlling admission of cooling air to said turbine shroud area by adjusting a duty cycle of a modulating signal according to said cooling air requirement.
2. The method of claim 1, wherein said determining cooling air requirement comprises using a signal representative an operating condition of said gas turbine engine.
3. The method of claim 2, wherein said signal representative of an operating condition is derived from at least one of a flight condition, a flight control setting, a fuel control unit signal, a high pressure turbine rotation speed, a combustor entrance temperature, and a combustor exit temperature.
4. The method of claim 2, wherein said operating condition is dependent on at least one of an aircraft cycle condition of said gas turbine selected from the group consisting of start, take-off, run-up, landing, normal cruise, low-level cruise, high-level cruise, low speed cruise, high speed cruise, reverse thrust, climb and descent.

5. The method of claim 1, wherein said gas turbine engine comprises a valve controlling an air passage for said cooling air and wherein said controlling admission of cooling air comprises controlling said valve.
6. The method of claim 5, wherein said valve is positionable in one of a fully open (on) position, when maximal air cooling results, and a fully closed (off) position, when no air cooling results.
7. The method of claim 5, wherein said controlling said valve comprises using pulse width modulation to control said valve.
8. The method of claim 1, wherein said modulating signal determines the position of said valve.
9. The method of claim 1, wherein said duty cycle comprises a light cooling mode and heavy cooling mode, wherein less cooling air is provided to the turbine area in said light cooling mode than in said heavy cooling mode.
10. The method of claim 9, wherein said duty cycle, in said light cooling mode, comprises values between 0% and 50% and, in said heavy cooling mode, comprises values between 50% and 100%.
11. The method of claim 1, wherein said modulating signal comprises a pulse width modulation signal.
12. A turbine section cooling arrangement in a gas turbine engine for controlling a clearance gap

between a rotor blade tip and a surrounding structure according to a cooling air requirement of said turbine section, said arrangement comprising:

an air passage bringing cooling air to said turbine section;

a valve controlling air through said air passage; and

a valve control unit adjusting a duty cycle of a modulating signal controlling said valve according to said cooling air requirement.

13. The cooling arrangement of claim 12 wherein the turbine section is a turbine shroud.
14. The cooling arrangement of claim 12, wherein said valve is positionable in one of a fully open (on) position, when maximal air cooling to said turbine section results, and a fully closed (off) position, when no air cooling to said turbine shroud results.
15. The cooling arrangement of claim 12, wherein said valve control unit uses a signal representative an operating condition of said gas turbine engine for controlling said valve.
16. The cooling arrangement of claim 15, wherein said signal representative of an operating condition is derived from at least one of a flight condition, a flight control setting, a fuel control unit signal, a high pressure turbine rotation speed, a combustor entrance temperature, and a combustor exit temperature.

17. The cooling arrangement of claim 15, wherein said operating condition is dependent on at least one of an aircraft cycle condition of said gas turbine selected from the group consisting of start, take-off, run-up, landing, normal cruise, low-level cruise, high-level cruise, low speed cruise, high speed cruise, reverse thrust, climb and descent.
18. The cooling arrangement of claim 15, wherein said valve control unit uses pulse width modulation for controlling said valve.
19. The cooling arrangement of claim 12, wherein said modulating signal determines the position of said valve.
20. The cooling arrangement of claim 12, wherein said duty cycle comprises a light cooling mode and heavy cooling mode, wherein less cooling air is provided to the turbine area in said light cooling mode than in said heavy cooling mode.
21. The cooling arrangement of claim 20, wherein said duty cycle, in said light cooling mode, comprises values between 0% and 50% and, in said heavy cooling mode, comprises values between 50% and 100%.
22. The cooling arrangement of claim 12 wherein said modulating signal comprises a pulse width modulation signal.